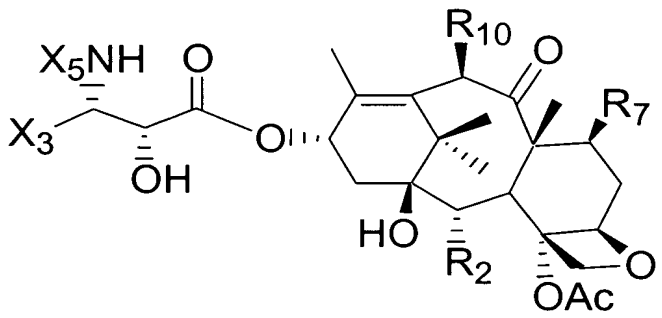
Claims

1. A method of inhibiting tumor growth in a mammal, said method comprising orally administering a therapeutically effective amount of a composition comprising at least one pharmaceutically acceptable carrier and a taxane having the formula



wherein

X_3 is 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, isopropyl, isobutenyl, cyclopropyl, cyclobutyl or cyclopentyl;

X_5 is $-COX_{10}$ and X_{10} is 2-furyl, 2-thienyl, 3-pyridyl, 4-pyridyl, n-propyl, isobutyl, butenyl or isobutenyl or X_5 is $-COOX_{10}$ and X_{10} is ethyl, n-propyl, isopropyl or isobutyl;

R_2 is benzoyloxy;

R_7 is $R_{7a}COO-$;

R_{10} is hydroxy; and

R_{7a} is heterosubstituted methyl.

2. The method of claim 1 wherein X_3 is 2-thienyl or 3-thienyl.

3. The method of claim 1 wherein X_3 is 2-furyl or 3-furyl.

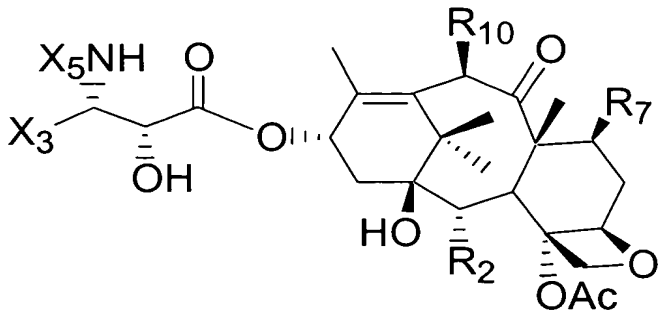
4. The method of claim 1 wherein R_{7a} is acetoxymethyl, methoxymethyl, phenoxymethyl, ethoxymethyl or methylthiomethyl.

5. The method of claim 4 wherein X_3 is 2-furyl or 3-furyl.

6. The method of claim 4 wherein X_3 is 2-thienyl or 3-thienyl.

7. A method of inhibiting tumor growth in a mammal, said method comprising orally administering a therapeutically effective amount of a composition comprising

at least one pharmaceutically acceptable carrier and a taxane having the formula



wherein

X_3 is 2-furyl or 2-thienyl;

X_5 is $-COOX_{10}$ and X_{10} is t-amyl;

R_2 is benzoyloxy;

R_7 is $R_{7a}COO-$;

R_{10} is hydroxy; and

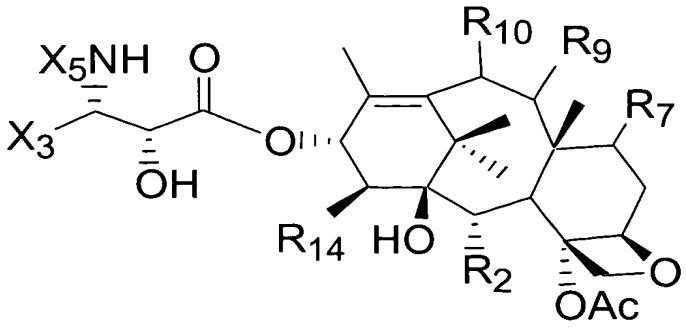
R_{7a} is methoxymethyl or acetoxymethyl.

8. The method of claim 7 wherein R_{7a} is methoxymethyl.

9. The method of claim 7 wherein X_3 is 2-furyl.

10. The method of claim 7 wherein X_3 is 2-thienyl.

11. A method for preparing a pharmaceutical composition comprising mixing at least one nonaqueous, pharmaceutically acceptable solvent and a taxane having the formula



wherein

R_2 is acyloxy;

R_7 is heterosubstituted acetate;
R_9 is keto, hydroxy, or acyloxy;
R_{10} is hydroxy;
R_{14} is hydrido or hydroxy;
X_3 is substituted or unsubstituted alkyl, alkenyl, alkynyl or heterocyclo;
X_5 is $-COX_{10}$, $-COOX_{10}$, or $-CONHX_{10}$;
X_{10} is hydrocarbyl, substituted hydrocarbyl, or heterocyclo; and
Ac is acetyl.

12. The method of claim 11 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl or 4-pyridyl, C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl.

13. The method of claim 11 wherein R_7 is $R_{7a}COO-$ and R_{7a} is a heterosubstituted methyl wherein the heteroatom is substituted to form a heterocyclo, alkoxy, alkenoxy, alkynoxy, aryloxy, hydroxy, protected hydroxy, oxy, acyloxy, nitro, amino, amido, thiol, ketal, acetal, ester or ether.

14. The method of claim 11 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl, or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl.

15. The method of claim 11 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl or 4-pyridyl, C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl, R_7 is $R_{7a}COO-$ and R_{7a} is a heterosubstituted methyl wherein the heteroatom is substituted to form a heterocyclo, alkoxy, alkenoxy, alkynoxy, aryloxy, hydroxy, protected hydroxy, oxy, acyloxy, nitro, amino, amido, thiol, ketal, acetal, ester or ether.

16. The method of claim 11 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl or 4-pyridyl, C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl, X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl, or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl.

17. The method of claim 11 wherein R_7 is $R_{7a}COO$-, R_{7a} is a heterosubstituted methyl wherein the heteroatom is substituted to form a heterocyclo, alkoxy, alkenoxy, alkynoxy, aryloxy, hydroxy, protected hydroxy, oxy, acyloxy, nitro, amino, amido, thiol, ketal, acetal, ester or ether, X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl, or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl.

18. The method of claim 11 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl, R_7 is $R_{7a}COO$-, R_{7a} is a heterosubstituted methyl wherein the heteroatom is substituted to form a heterocyclo, alkoxy, alkenoxy, alkynoxy, aryloxy, hydroxy, protected hydroxy, oxy, acyloxy, nitro, amino, amido, thiol, ketal, acetal, ester or ether, X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl, or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl.

19. The method of claim 13 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl or 3-thienyl.

20. The method of claim 14 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl or 3-thienyl.

21. The method of claim 19 wherein R_7 is $R_{7a}COO$- and R_{7a} is a heterosubstituted methyl wherein the heteroatom is substituted to form an alkoxy or acyloxy.